

Microsoft DevOps Solutions: Integrating Source Control with Tools

INTEGRATING AZURE DEVOPS WITH GITHUB



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Learning Objectives

**Integrate GitHub
with DevOps
pipelines**

**Integrate GitHub
with identity
management
solutions
(Azure AD)**

**Integrate source
control artifacts
for human
consumption**



*Authenticate to the tool
with a personal access
token.*



Understanding Version Control

**Different version control
options**

Distributed vs. Centralized



The Different Ways That GitHub Integrates with Azure Pipelines



**Developer
does work**



**Developer
pushes a
commit to
Github**



**Commit
triggers a build
in Azure
Pipelines**



The Commit to GitHub



Everything begins with the commit

•This Github repository has the information necessary to connect to the related pipeline

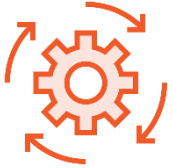
- The service endpoint in Azure for the related build
- Some form of credential which authenticates GitHub to Azure

Azure provisions the build environment

And performs some additional preparation for the build



The Build in Azure



The build environment is all set



It checks out the code from GitHub



This is executing inside a build VM in the Azure cloud



Azure simply executes relatively simple Git checkout commands



Permissions in GitHub

Permissions are key in this scenario

Azure needs permissions to execute these commands



When It Is Another Account

**YOU are tasked
with setting up
the build**

**There must be some
account in GitHub
to set this up**

**And it shouldn't
be your personal
account**

**Use a different
account to keep
things separated**

**The owner account
of the repos will
add the account as
a collaborator**



Why This Is a Good Idea



There's a good chance
you won't be working
here a year from now



You'll either have to
give them your
credentials...



Or do what we're
about to do

Connecting Your Azure AD with GitHub

Identity Management

**We definitely want everything
managed in one place**



Azure Active Directory as the Identity Provider

Azure Active Directory

You'll need an Azure Active Directory (duh)

And also a GitHub Enterprise Organization

Available with a fourteen-day eval license



Understanding Version Control Systems



Git has won the war.



Version Control Systems on the Exam

**When you see
questions about
version control on
the exam...**

**Make Git the
default choice**

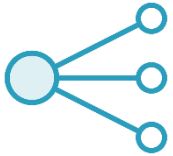
**Except for specific
use cases**



Git and Distributed Version Control



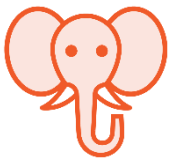
Git is a distributed version control system



There is no central authority



Everything is coordinated with pulls



Which can make for a large download



The Largest Git Repo on Earth



The Windows OS Git repo (as of 2017)

- 3.5 million files
- 300G
- 440 branch

This is a HUGE repo

Virtualized File System (VFS) for Git

VFS optimizes file operations

And mitigates the disadvantages of Git architecture

Mercurial



1. Mercurial is a distributed version control system like Git
2. Mercurial is not a supported version control system for Azure Pipelines

New pipeline

Where is your code?



Azure Repos Git YAML

Free private Git repositories, pull requests, and code search



Bitbucket Cloud YAML

Hosted by Atlassian



GitHub YAML

Home to the world's largest community of developers



GitHub Enterprise Server YAML

The self-hosted version of GitHub Enterprise



Other Git

Any generic Git repository



Subversion

Centralized version control by Apache

[Use the classic editor](#) to create a pipeline without YAML.

In the list of supported version control provider for Azure pipelines – Mercurial should not be there.



Centralized Version Control Systems

VCS with a central authority

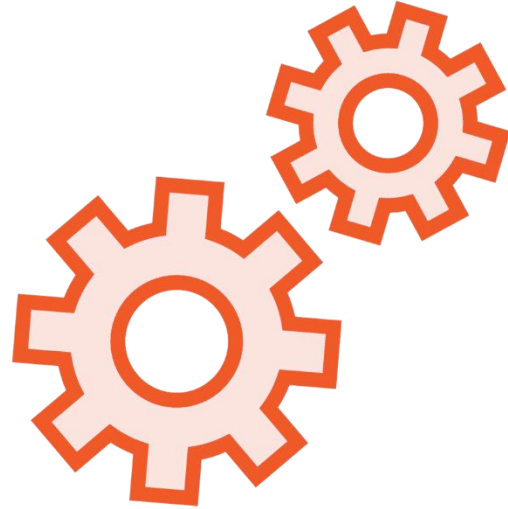
Upgrade TFS and migrate



Subversion



The one supported,
centralized VCS



Probably #2 in the
VCS game



HTTP-based

Summary



Integrating GitHub with Azure DevOps

- Integrating with GitHub via username and password
- Integrating with Github via a personal access token
- OAuth

Integrating an Azure Active Directory Catalog with GitHub

- Identity Management

Version Control Systems

- Distributed Systems
 - Git
 - Mercurial
- Centralized Systems
 - Subversion

